Rule 1.126

Replacement Sheets

16. (Newly added) Method of producing a bending-resistant, elongated body comprising:

providing an elongated blank having at least one cavity extending essentially along the entire length of the blank, said at least one cavity having a longitudinal axis, said at least one cavity being enclosed in said blank but for first and second spaced openings at opposite ends of said longitudinal axis, the inner surface of which cavity is at a distance from the mass center of the blank seen in a section at right angles to its longitudinal axis and is arranged concentrically around said mass center, the blank being formed from a metallic material; inserting a fiber composite body formed from a plurality of fibers in a non-metallic binder into at least one of said first and second openings of the at least one cavity; and affixing in the cavity the fiber composite body with an outer surface essentially congruent with the inner surface of the cavity, wherein a majority of fibers in the fiber composite body both extend essentially parallel to the longitudinal axis of the elongated blank and are elongated along the whole of its length.

17. (Newly added) Method according to claim 16, wherein the step of affixing comprises gluing the fiber composite body in the cavity.

18. (Newly added) Method according to claim 16, wherein the step of affixing comprises shrinking the cavity to the the fiber composite body.

19. (Newly added) Method according to claim 17, wherein that epoxy-, acrylic-, polyurethane- or phenolic-resin-based adhesive is used for gluing.

20. (Newly added) Method according to claim 16, wherein carbon fiber in an epoxide matrix, is used as the fiber composite body.

21. (Newly added) Method according to claim 16, wherein the step of producing the blank produces a blank that is a shaft with a number of longitudinal cavities, which are arranged with equal

pitch, symmetrically around the mass center of the blank seen in a section at right angles to its longitudinal axis.

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22. (Newly added) A bending-resistant, elongated body wherein the elongated body has at least one cavity extending essentially along the whole of its length, said at least one cavity having a longitudinal axis, said at least one cavity being enclosed in said blank but for first and second spaced openings at opposite ends of said longitudinal axis, an inner surface of which cavity is at a distance from the body's mass center seen in a section at right angles to its longitudinal axis and is arranged concentrically around said mass center, with a fiber composite body formed from fibers in a non-metallic binder having an outer surface which is essentially congruent with the inner surface of the cavity is affixed in the cavity, wherein the majority of fibers in the fiber composite body both extend essentially parallel to the longitudinal axis of the elongated body and are elongated along the whole of its length and the elongated body is formed from a metallic material.

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23. (Newly added) The bending-resistant, elongated body of claim 22, wherein the fiber composite body consists of carbon fiber in an epoxide matrix.

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24. (Newly added) The bending-resistant, elongated body of claim 22, wherein the outer surface of the fiber composite body is joined to the inner surface of the cavity by means of an adhesive.

23 22
25. (Newly added) The bending-resistant, elongated body of claim 24, wherein the adhesive is epoxy-, acrylic-, polyurethane- or phenolic-resin-based.

24 20
26. (Newly added) The bending-resistant, elongated body of claim 22, wherein the outer surface of the fiber composite body is joined to the inner surface of the cavity by shrinking.

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27. (Newly added) The bending-resistant, elongated body according to claim 22, wherein the elongated body with longitudinal cavities comprises an extruded profile beam or a tube.

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28. (Newly added) The bending-resistant, elongated body according to claim 20 22, wherein the elongated body (1) is a shaft having a number of longitudinal cavities distributed with an equal pitch symmetrically around its mass center seen in a section at right angles to its longitudinal axis.

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29. (Newly added) A method for producing a bend-resistant, elongated body, the method comprising:

forming an elongated blank having at least one cavity extending essentially along the entire length of the blank, said at least one cavity having a longitudinal axis, said at least one cavity being enclosed in said blank but for first and second spaced openings at opposite ends of said longitudinal axis, an inner surface of the cavity being at a distance from the mass center of the blank seen in a section at right angles to its longitudinal axis and that of the cavity, said inner surface being arranged concentrically around said mass center, the blank being formed from a metallic material;

forming a fiber composite body from fibers extending essentially parallel to the longitudinal axis of the fiber composite body and extending essentially along the length of the fiber composite body by inserting said fiber composite body into at least one of said first and second openings, the fibers embodied in a matrix; and

affixing an outer surface of the fiber composite body to the inner surface of the cavity of the elongated blank.

28 14
30. (Newly added) The method of claim 16 wherein the outer surface of the fiber composite body is affixed to the inner surface of the cavity by gluing.

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31. (Newly added) The method of claim 16, wherein said fiber composite body is tubular having a central bore devoid of fibers.

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32. (Newly added) The bending-resistant, elongated body of claim 22, wherein said fiber composite body is tubular and has a central bore devoid of fibers.

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33. A spindle for carrying paper reels, said spindle comprising a bending-resistant, elongated body wherein the elongated body has at least one cavity extending essentially along the whole of its length, said at least one cavity having a longitudinal axis, said at least one cavity being enclosed in said blank but for first and second spaced openings at opposite ends of said longitudinal axis, an inner surface of which cavity is at a distance from the body's mass center seen in a section at right angles to its longitudinal axis and is arranged concentrically around said mass center, with a fiber composite body formed from fibers in a non-metallic binder having an outer surface which is essentially congruent with the inner surface of the cavity is affixed to the cavity, wherein the majority of fibers in the fiber composite body both extend essentially parallel to the longitudinal axis of the elongated body and are elongated along the whole of its length and the elongated body is formed from metallic material.

By the accompanying amendment, the claims have been amended to recite that the cavity is enclosed in the elongated blank but for first and second spaced openings at opposite ends of the longitudinal axis of the cavity, that the inner surface of the cavity is arranged concentrically around the mass center. Claim 16 also recites the step of inserting a fiber composite body into at least one of the first and second openings. Support for the amendment can be found in the Figures and at page 3, lines 18-19 of the PCT publication.

Hopfeld discloses a method for making reinforced structural members. In all embodiments disclosed, the recess or cavity into which the fiber glass and binder are filled is initially open. That is, not only are the longitudinal ends of the cavities open, but also the cavities are open laterally, e.g., from the top in Figure 1 of Hopfeld. Flanges are provided which, upon filling the cavity with fiber, are folded together to close the lateral cavity opening (Figure 2). Rollers are then used to fold the flanges tightly, and the binder and fiber are set by the application of heat.

In contrast, in the instant method and apparatus as now claimed, the cavities formed are open only at their opposite longitudinal ends. Consequently, the cavities must be filled through one of these longitudinal ends rather than laterally as in Hopfeld. This is nowhere disclosed or suggested by Hopfeld.

In addition, none of the cavities in Hopfeld is arranged concentrically around the mass center as is the case for at least one of the cavities in the present invention. The claims have now been amended to recite this distinction.

The Examiner rejects claims 1, 2, 4-10 and 12-15 under 35 U.S.C. §102(b) as being anticipated by Henshaw et al. The Examiner states that Henshaw et al. disclose all of the limitations of these claims.

Like Hopfeld, Henshaw et al. also does not disclose or suggest a concentrically arranged cavity. Accordingly, the foregoing amendment to the claims that distinguishes Hopfeld also serves to distinguish Henshaw et al. with respect to the arrangement of the cavity limitation.

The Examiner rejects claims 4, 5, 8, 10 and 12 under 35 U.S.C. §103(a) as being unpatentable over Hopfeld, and claims 3 and 11 as being unpatentable over Henshaw et al. The Examiner has taken Official Notice that the elements recited in these claims are well known.

The new claims analgous to these are believed to be allowable by virtue of their dependence.

New claims 31-33 have been added to further define the invention. Support for these claims can be found at page 2, lines 29-31 and in Figure 1 of the PCT publication.

Reconsideration and allowance are respectfully requested in view of the foregoing.

Respectfully submitted,

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